

CLAIMS

What is claimed is:

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C1  
A method for detecting the path to a first network device, comprising the steps of:  
receiving a data packet containing a hop count, a destination Ethernet address corresponding to said first network device, and a source Ethernet address corresponding to a second network device;

modifying said hop count to form a modified data packet, and examining said destination Ethernet address to identify one or more ports on a network device receiving said data packet to forward information to said destination Ethernet address; and

forwarding said modified data packet through said ports.

2. The method of claim 1, wherein said hop count is not modified if said destination Ethernet address is the same as the Ethernet address of said network device receiving said data packet.

3. A method for detecting the path to a first network device, comprising the steps of:  
transmitting from a second network device a data packet containing a hop count, a destination Ethernet address corresponding to said first network device, and a source Ethernet address corresponding to said second network device;

receiving in a third network device said data packet, modifying said hop count to form a modified data packet, and examining said destination Ethernet address to identify one or more ports on said third network device to forward information to said destination Ethernet address; and

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forwarding said modified data packet from said third network device through said ports.

4. The method of claim 3, wherein said third network device modifies said hop count in said data packet before forwarding said modified data packet.

*9/1*  
5. An apparatus on a network for detecting the path to other network devices, comprising:

discovery protocol logic for receiving, processing, and sending discovery protocol packets to neighboring network devices;

packet redirection logic for examining the hop count, source address, and destination address fields of Ethernet packets under control of a configuration and management interface and for forwarding said Ethernet packets to other network devices in accordance with said source and destination addresses.

6. The apparatus of claim 5, further comprising logic for transmitting a hop probe message containing an initial hop count, the destination Ethernet address of the desired station, and the source address of said apparatus in the source address field.

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A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for detecting the path to a first network device, the method comprising:

transmitting from a second network device a data packet containing a hop count, a destination Ethernet address corresponding to said first network device, and a source Ethernet address corresponding to said second network device;

receiving in a third network device said data packet, modifying said hop count to form a modified data packet, and examining said destination Ethernet address to identify one or more ports on said third network device to forward information to said destination Ethernet address; and

forwarding said modified data packet from said third network device through said ports.

8. A method for detecting the path to a first network device, comprising the steps of:

- 1) initializing a hop count;
- 2) setting a first destination Ethernet address field to be equal to the Ethernet address of said first network device;
- 3) setting a first source Ethernet address field to be equal to the Ethernet address of a second network device;
- 4) transmitting from said second network device a data packet containing said hop count, said first destination Ethernet address, and said first source Ethernet address to adjacent network devices;
- 5) receiving at said second network device a reply data packet containing a second destination Ethernet address corresponding to the Ethernet address of said second network device and a second source Ethernet address corresponding to the Ethernet address of one of said adjacent network devices.

9. The method of claim 8, wherein if said second source Ethernet address in said reply data packet is not equal to said Ethernet address of said first network device, said hop count is modified and steps 4 and 5 are repeated.

10. The method according to claim 1, wherein said first network device is a LAN switch.

11. The method according to claim 3, wherein said first network device is a LAN switch.

12. The method according to claim 3, wherein said second network device is a LAN switch.

13. The method according to claim 3, wherein said third network device is a LAN switch.

14. The apparatus according to claim 5, wherein said apparatus is a LAN switch.

15. The apparatus according to claim 6, wherein said apparatus is a LAN switch.

16. The method according to claim 8, wherein said first network device is a LAN switch.

17. The method according to claim 8, wherein said second network device is a LAN switch.

18. A cluster of network devices, comprising:

a first network device in said cluster capable of receiving a data packet containing a hop count, a destination Ethernet address corresponding to a second network device in said cluster to which a path is to be determined, and a source Ethernet address corresponding to a third network device in said cluster, wherein said first network modifies said hop count to form a modified data packet, examines said destination Ethernet address to identify one or more ports on said first network device to forward information to said destination Ethernet address; and forwards said modified data packet through said port or ports.

19. The cluster of network devices according to claim 18, wherein said first network device does not modify said hop count if said destination Ethernet address is the same as the Ethernet address of said first network device.

20. The cluster of network devices according to claim 18, wherein said first network device is a LAN switch.

21. The cluster of network devices according to claim 20, wherein said second and third network devices are LAN switches.

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